

AS7. 46/3: 4/984

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# MONTANA WATER SUPPLY OUTLOOK

## Snowpack and Streamflow Forecasts as of April 1, 1984

United States Department of Agriculture  
Soil Conservation Service  
Montana Agricultural Experiment Station  
Bozeman, Montana

UNITED STATES DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
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### March snowfall improves

Heavy snowfall during March throughout southwestern, central and west-central Montana improved mountain snowpack.



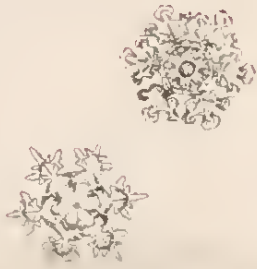
However, the northwest corner of the State and areas along the Continental Divide from Rogers Pass into Canada did not receive this heavy snowfall and the winter's accumulation of snow is still only 50 to 60 percent of average.

Southwestern Montana continues to receive its share of the snowstorms and has near average or a little above average snowpack.

The headwaters of the Yellowstone River have received some snow but snowpack remains below average.

Most mountain locations in Montana received 3 to 5 inches of moisture during March. Some of the heavier snowfall areas recorded 6 to 8 inches of additional moisture added to the snowpacks.

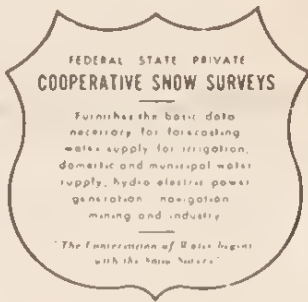
Snow at lower elevations and on south-facing slopes is beginning to melt. As temperatures increase, the snowline will begin receding up the mountain.



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The Montana Water Supply Outlook is a publication of the U.S. Soil Conservation Service. The SCS administers the Cooperative Snow Survey Program in cooperation with other federal, state and private agencies, organizations, and individuals.

The report is prepared by SCS, Snow Survey and Water Supply Forecast Staff, Room 443, Federal Building, 10 East Babcock, Bozeman, Montana.



### Statewide water shortages possible

Spring and summer streamflows are forecast to be well below average for the majority of streams and rivers in the State.

Some areas in northwest and north-central Montana could have near record low runoff if spring rains continue to follow the below average trends of this winter's snowfall. A part of the Missouri River headwaters is the only area where runoff is expected to be near average.

Shortages in irrigation water supplies could begin developing much earlier than usual and could be quite severe in low-runoff areas without stored waters.





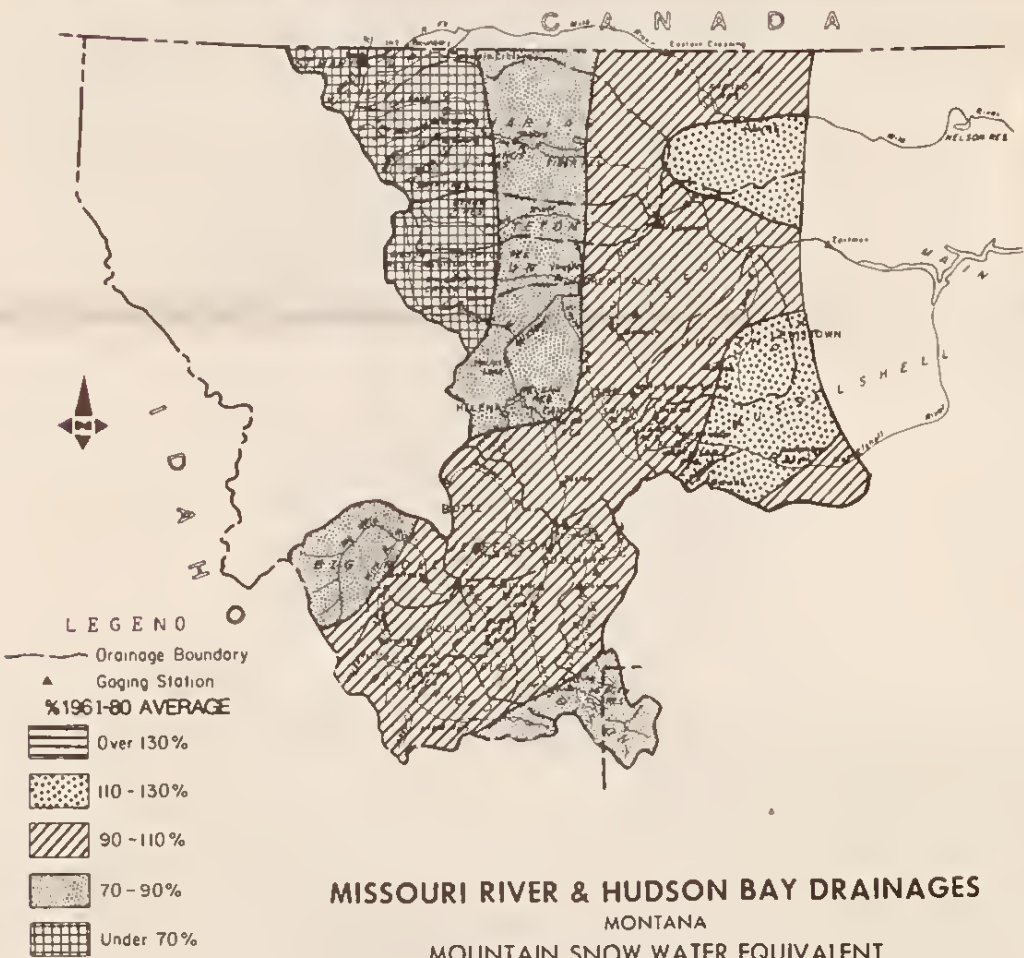
# Missouri River & Hudson Bay Drainages

## STREAMFLOW FORECASTS

BASIN STREAM and/or FORECAST POINT	THIS YEAR		PAST RECORD		THIS YEAR		PAST RECORD	
	FORECAST		THOUSAND ACRES FEET		FORECAST		THOUSAND ACRES FEET	
	Thousand Acres Feet	Percent of Average	Last Year	Average	Thousand Acres Feet	Percent of Average	Last Year	Average
PERIOD	April - September				April - July			
RED ROCK RIVER near Monida (1)	113	110	186	103	106	110	159	96.3
BEAVERHEAD RIVER near Grant (2)	170	108	250	158	146	107	197	137
BEAVERHEAD RIVER at Barratts (2)	212	101		209	186	103		180
RUBY RIVER near Alder	109	108		101	92.0	109		84.6
BIG HOLE RIVER near Melrose	640	84		760	590	84		698
BOULDER RIVER near Boulder	Streamflow measurements			98.7	discontinued			87.8
WILLOW CREEK near Harrison	20.5	102		20.0	18.5	104		17.8
MADISON RIVER near Grayling (3)	452	91	532	496	355	91	408	388
MADISON RIVER near McAllister (4)	843	99	947	848	671	100	749	672
GALLATIN RIVER near Gateway	530	97	534	545	455	98	451	464
INFLOW MIDDLE CREEK RESERVOIR near Bozeman (5)	27.3	97	26.3	28.6	23.6	97	22.5	24.7
HYALITE CREEK near Bozeman (6)	43.0	96		44.8	37.2	96		38.7
GALLATIN RIVER at Logan	575	94		611	498	95		523
MISSOURI RIVER at Toston (7)	2390	94	2885	2,545	2024	92	2385	2,196
SHEEP CREEK near White Sulphur Springs	19.2	88	16.8	21.8	16.7	88	13.0	19.0
SUN RIVER at Gibson Dam (8)	330	58	349	570	300	57	304	522
BELT CREEK near Monarch	121	90		134	110	89		123
MISSOURI RIVER at Fort Benton (9)	3392	85		3,980	2880	85		3,468
TWO MEDICINE CREEK near Browning (10)	171	69		248	159	68		235
8ADGER CREEK near Browning	88.0	68		130	76.0	67		113
INFLOW SWIFT RESERVOIR near Dupuyer	60.0	69	51.7	86.7	51.0	68	41.9	74.7
CUT BANK CREEK at Cut Bank	75.0	66		114	69.0	64		108
MARIAS RIVER near Shelby	325	60	247	542	300	58	232	518
MISSOURI RIVER at Virgelle (11)	3729	82		4,570	3300	82		4,030
MISSOURI RIVER near Landusky (11)	4130	83		4,980	3635	83		4,383
NORTH FORK MUSSELSHELL RIVER near Delpine	5.5	86		6.4	4.6	85		5.4
SOUTH FORK MUSSELSHELL RIVER above Martinsdale	50.2	80		62.8	48.0	81		58.9
MISSOURI RIVER below Fort Peck Dam (11)	4025	81		4,961	3585	81		4,428
MILK RIVER at Eastern Crossing	232	94		248				
MILK RIVER at Eastern Crossing (12)	65.4	80		81.7				
INFLOW LAKE SAKAKAWEA, ND (11)	10200	80		12,755	9290	80		12,239
SASKATCHEWAN RIVER BASIN								
SWIFTCURRENT CREEK at Sherburne (13)	102	80	100	128	88.0	79	87.9	112
ST. MARY'S RIVER near Babb (13)	375	77		487	315	76		416

- (1) Adjusted for storage in Lima Reservoir.  
(2) Adjusted for storage in Lima and Clark Canyon Reservoirs.  
(3) Adjusted for storage in Hebgen Lake.  
(4) Adjusted for storage in Hebgen Lake and Ennis Lake.  
(5) Sum of West Fork Hyalite Creek and East Fork Hyalite Creek above the Reservoir.  
(6) Adjusted for storage in Middle Creek Reservoir.  
(7) Adjusted for storage in Lima, Hebgen, Ennis & Clark Canyon Reservoirs.  
(8) Adjusted for storage in Gibson Reservoir & diversions.  
(9) Adjusted for storage in Lima, Clark Canyon, Hebgen, Ennis, Gibson, Pishkun, Willow Creek & Canyon Ferry Reservoirs.  
(10) Adjusted for storage in Two Medicine Reservoir & diversions in Two Medicine Canal.  
(11) Adjusted for all upstream reservoirs.  
(12) Flow at Eastern Crossing minus St. Mary's Canal.  
(13) Adjusted for storage in Lake Sherburne.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE



MISSOURI RIVER & HUDSON BAY DRAINAGES  
MONTANA  
MOUNTAIN SNOW WATER EQUIVALENT

SUMMARY of SNOW MEASUREMENTS (COMPARISON WITH PREVIOUS YEARS)			
RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average
Beaverhead	31	81	94
Ruby	14	93	106
Big Hole	27	88	87
Boulder	15	101	88
Jefferson	87	87	93
Madison	36	82	86
Gallatin	24	103	94
Missouri Headwater	147	88	91
West-side Missouri (Toston-Cacade)	11	96	75
Smith-Belt-Arrow	11	109	89
Missouri Main-stem	22	104	83
Teton & Sun	12	69	44
Marias	7	79	58
Marias-Teton-Sun	19	75	52
Judith-Musselshell	19	137	101
Milk	11	92	67
Bear Paws	6	439	110
Missouri (Total)	207	92	87
Saskatchewan			
St. Mary's	7	72	61
Bow River in Alberta	11	89	77

## Missouri snowpack variable

Southwestern and central mountain ranges had good snowfall during March. The area along the Continental Divide from Glacier National Park to Rogers Pass did receive some snow but not enough to overcome earlier deficiencies. Snowpack continues to be 50 to 60 percent of average in this area.

Snowpack is below average in the Upper Big Hole and Madison River drainages, and near or above average in the remainder of the Missouri River headwaters above Three Forks.

Smaller mountain ranges in central Montana generally have above average snowpack.

Some melt has occurred at lower elevations and on south-facing slopes.

## Most drainages below average

Runoff forecasts have increased slightly on most streams. The Beaverhead, Ruby, Madison and Gallatin Rivers are expected to have runoff near or a little above average. However, all other drainages are forecast to have below to well below average runoff.

Mid- to late season shortages of irrigation water are expected on the Big Hole and Boulder Rivers in the Missouri River headwaters and on all tributaries to the Missouri below Canyon Ferry Reservoir.

If spring rains follow the snowpack trends and are below average, streams in the Milk, Marias, Teton, Sun and Dearborn drainage could produce runoff near the lowest on record.

Irrigators in these areas not having stored water need to be prepared for a greatly reduced water supply.



MOUNTAIN STREAMS ARE GENERALLY FREE OF SNOW AND WILL SOON BE CARRYING SNOWMELT WATER TO DOWNSTREAM AREAS.



# Yellowstone River Drainage

## STREAMFLOW FORECASTS

BASIN STREAM and/or FORECAST POINT	THIS YEAR		PAST RECORD		THIS YEAR		PAST RECORD	
	FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET	
	Thousand Acres Feet	Percent of Average	Last Year	Average	Thousand Acres Feet	Percent of Average	Last Year	Average
PERIOD	April - September				April - July			
YELLOWSTONE RIVER at Corwin Springs . . . . .	1650	B1	1725	2,027	1380	82	1397	1,686
YELLOWSTONE RIVER near Livingston . . . . .	1930	81		2,379	1610	82		1,969
BOULDER RIVER at Big Timber . . . . .	294	74		398	270	74		366
STILLWATER near Absarokee (1) . . . . .	500	79		632	415	79		528
CLARKS FORK RIVER near Belfry . . . . .	455	72		628	410	73		563
ROCK CREEK near Red Lodge . . . . .	Streamflow measurements 115				discontinued by USGS 88.1			
INFLOW COONEY RESERVOIR near Boyd (2) . . . . .	50.0	B3		60.5	41.0	83		49.5
YELLOWSTONE RIVER at Billings . . . . .	3680	B2	3133	4,516	3131	82	3793	3,833
BIGHORN RIVER near St. Xavier (3) . . . . .	1512	77	2060	1,976	1370	76	1849	1,794
LITTLE BIGHORN RIVER near Hardin . . . . .	176	97		182	157	97		162
TONGUE RIVER near Decker . . . . .	258	96		269	235	96		244
YELLOWSTONE RIVER at Miles City (4) . . . . .	5425	B0		6,787	4720	B0		5,906
POWDER RIVER at Moorhead . . . . .	226	86		263	208	B6		243
YELLOWSTONE RIVER near Sidney (5) . . . . .	5930	79		7,518	5170	79		6,544

- (1) Adjusted for storage in Mystic Lake.  
(2) Adjusted for storage in Cooney Reservoir.  
(3) Adjusted for storage in Buffalo Bill, Boysen, Bull Lake, Pilot Butte and Bighorn Reservoirs.  
(4) Adjusted for storage in Bull Lake, Buffalo Bill, Boysen, Pilot Butte, Bighorn and Tongue River Reservoirs.  
(5) Adjusted for reservoirs shown in (4) and diversions into the Lower Yellowstone Canal.

ALL FORECASTS PREPARED IN COOPERATION  
WITH THE NATIONAL WEATHER SERVICE

## Snowpack

improves slightly

Snowpack in the Yellowstone River headwaters, in and near Yellowstone National Park, improved a little with March snowfall.

However, almost all of the Yellowstone River drainage still has below average snowpack. The only areas with better conditions are along the Gallatin Range and Crazy Mountains. These areas have near to a little above average snowpack.

Some melt has occurred at lower elevations and on south-facing slopes.

## WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Yellowstone at Livingston . . . . .	Fair	Poor
Shields . . . . .	Avg	Avg
Boulder . . . . .	Fair	Poor
Sweetgrass - Big Timber . . . . .	Avg	Avg
Stillwater . . . . .	Fair	Poor
Rock Creek . . . . .	Fair	Poor
Clark's Fork . . . . .	Fair	Poor
Yellowstone above Bighorn . . . . .	Fair	Fair
Bighorn . . . . .	Fair	Fair
Little Bighorn . . . . .	Fair	Fair
Tongue . . . . .	Fair	Fair
Powder . . . . .	Fair	Fair
Lower Yellowstone . . . . .	Fair	Fair

## Yellowstone forecasts

remain low

Spring and summer streamflow forecasts are about the same as those issued last month. Runoff is expected to be 20 to 25 percent less than average on most streams and rivers.

Streams flowing out of the Crazy Mountains should have runoffs closer to average.

Mid- to late season irrigation water shortages can be expected on most smaller drainages that flow into the Yellowstone River. Streamflows will begin to drop earlier than usual.

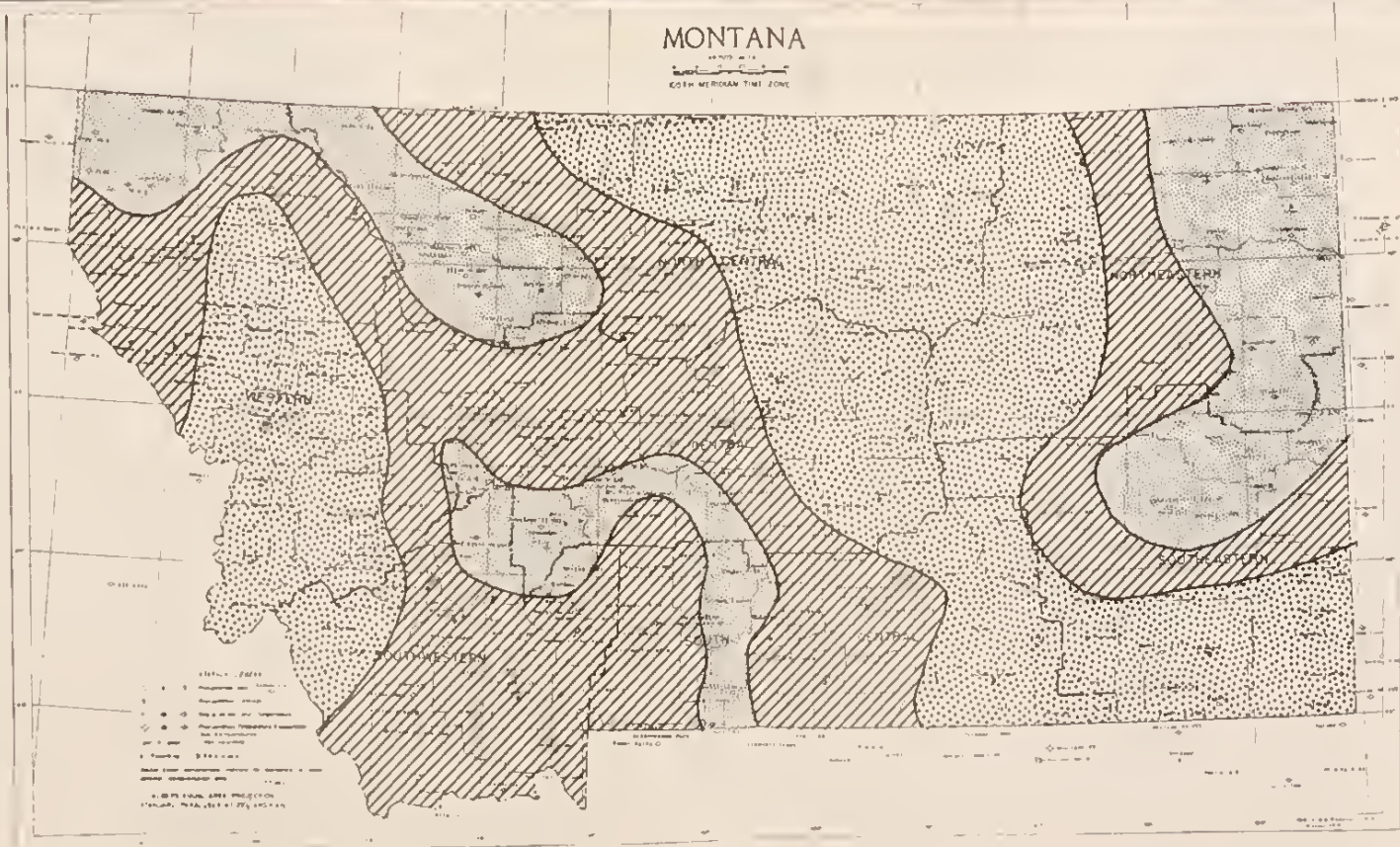
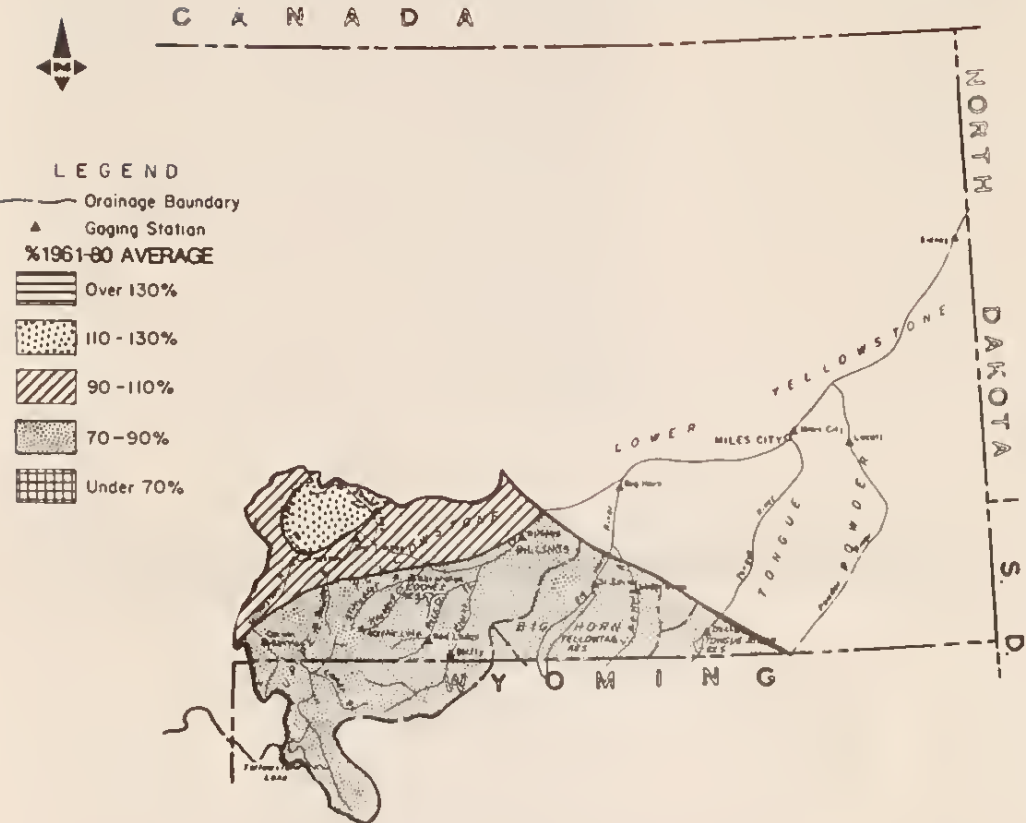
Irrigators with junior water rights should be prepared for a reduced water supply.

## SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Gauges Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average
Upper Yellowstone			
ab Livingston ..	20	91	73
Shields .....	10	130	103
Boulder & Stillwater .....	12	95	73
Rock Creek & Clark's Fork ...	17	88	75
Yellowstone (ab Bighorn River) .	59	97	78
Bighorn/Wyoming .	29	101	84
Little Bighorn ..	3	117	94
Bighorn (Total) .	32	102	85
Tongue .....	9	125	102
Powder .....	4	106	94
Yellowstone (Total) .....	104	101	82

## YELLOWSTONE RIVER DRAINAGE MONTANA MOUNTAIN SNOW WATER EQUIVALENT



VALLEY PRECIPITATION  
MARCH 1984

Source: NWS  
Great Falls, MT



SNOW SURVEY DATA

SNOW April 1, 1984

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Elevation				Last Year	Average
ABUNDANCE LAKE	8800	3/27	61	18.3	20.8	22.0
AMBROSE	6480	3/25	43	12.1	11.1	14.1
ARCH FALLS	7350	3/26	45	11.8	10.8	13.8
ASHLEY DIVIDE	4820	3/28	15	4.3	4.4	6.1
ASHLEY LAKE	4000	3/28	14	3.7	4.3	5.6
BADGER PASS	6900	4/01	73	26.0A	29.6	40.4
BADGER PASS PILLOW	6900	4/01	SP	21.8	26.1	36.4
BALD EAGLE PEAK	5700	3/30	107	44.2		62.9
BALD RIDGE	7500	3/30	54	15.6	10.0	14.2
BANFIELD MOUNTAIN	5600	3/30	35	11.4	24.0	24.5
BANFIELD MOUNTAIN PILLOW	5600	4/01	SP	10.7	20.6	19.8
BARRE CREEK	5500	3/27	81	29.9	45.5	48.9
BARRE MIDWAY	4600	3/27	59	20.9	37.6	38.1
BARRE TRAIL	3800	3/27	3	1.0	3.6	9.5
BARKER LAKES	8250	4/04	46	13.0	16.4	16.4
BARKER LAKES PILLOW	8250	4/01	SP	14.4	17.9	16.9
BASIN CREEK	7180	3/29	41	8.4	11.4	8.5
BASIN CREEK PILLOW	7190	4/01	SP	8.1	9.4	8.1
BASSOO PEAK	5150	3/30	13	4.1	7.3	11.2
BEAGLE SPRINGS	8850	3/28	37	8.6	8.6	9.5
BEAGLE SPRINGS PILLOW	8850	4/01	SP	9.2	9.0	9.5
BEAR BASIN	8150	3/28	79	23.0	21.6	27.3
BEAR PAW SKI AREA	5200	3/29	27	8.4	2.3	7.7
BEAVER LAKE	5900	4/01	44	14.0	15.8	24.8
BERRY MEADOW	7000	3/29	31	8.0	8.0	8.3
BIG CREEK	6750	3/31	111	42.0	49.3	47.2
BIG SKY	7700	3/30	61	18.2	15.6	16.6
BIG SKY MEADOW	6350	3/28	41	11.1	10.2	10.2
BIG SNOWY	7150	3/29	84	28.8	16.6	23.1
BLACK BEAR	7950	3/26	107	37.1	48.4	43.9
BLACK BEAR PILLOW	7950	4/01	SP	32.9	42.1	39.0
BLACK MOUNTAIN	7750	3/29	68	16.5	14.5	16.7
BLACK PINE	7100	3/27	42	10.4	10.6	14.7
BLACK PINE PILLOW	7100	4/01	SP	12.1	11.0	15.4
BLOODY DICK	7600	3/26	52	12.0	14.0	14.4
BLOODY DICK PILLOW	7550	4/01	SP	11.6	12.8	12.9
BLUE LAKE	5900	4/01	47	15.8A	18.9	27.0
BOTS BOTS	7750	3/27	41	8.6	8.3	8.6
BOULDER MOUNTAIN	7950	3/26	66	20.8	19.0	20.2
BOULDER MOUNTAIN PILLOW	7950	4/01	SP	22.0	22.8	22.7
BOX CANYON	6670	3/26	28	6.9	9.0	13.2
BOX CANYON PILLOW	6700	4/01	SP	4.3	7.1	11.2
BRANHAM LAKES	8850	3/30	104	32.6	33.2	31.5
BRIDGER BOWL	7250	3/29	87	27.1	22.5	29.2
BRIDGER BOWL PILLOW	7250	3/29	SP	27.2	22.1	27.7
BRISTOW CREEK	3900	3/30	0	.0	5.7	11.4
BRUSH CREEK TIMBER	5000	3/28	18	5.0	8.8	10.3
BULL MOUNTAIN	6600	3/30	24	6.1	6.4	6.5
CABIN CREEK	5200	3/31	3	.9	2.4	7.0
CALL ROAD	8050	3/27	51	13.3	14.6	13.0
CALVERT CREEK	6430	3/28	37	9.1	11.8	12.2

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SNOW April 1, 1984

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Elevation				Last Year	Average
CALVERT CREEK PILLOW	6430	4/01	SP	6.7	8.9	9.3
CAMP MISERY	6400	3/29	141	53.5	49.4	50.0
CAMP SENIA	7890	3/27	35	7.2	7.4	7.4
CARROT BASIN	9000	3/29	93	32.2	37.1	38.6
CARROT BASIN PILLOW	9000	4/01	SP	27.3	31.3	29.9
CARTER CREEK	7400	4/01	36	8.6	7.8	6.1
CASHE CREEK	7800	4/02	38	11.2		
CASHE CREEK PILLOW	7800	4/01	SP	9.1	10.0	9.3
CEDAR GROVE	3760	3/30	0	.0	9.4	13.2
CHESSMAN RESERVOIR	6200	3/26	15	3.4	3.4	3.9
CHICKEN CREEK	4060	3/27	31	10.0	11.1	15.5
CLOVER MEADOW	8600	3/28	67	18.9	20.0	19.1
CLOVER MEADOW PILLOW	8800	4/01	SP	20.3	13.1	17.9
COLE CREEK	7850	3/29	60	17.6	20.6	18.9
COLE CREEK PILLOW	7850	4/01	SP	18.0	18.3	17.6
COLLEY CREEK	6300	3/29	27	6.4	5.8	9.4
COMBINATION	5600	3/27	20	5.4	4.8	6.6
COMBINATION PILLOW	5600	4/01	SP	4.9	4.5	6.6
COOKE STATION	8150	3/28	51	14.8	17.4	21.0
COPPER BOTTOM	5200	3/31	19	6.6	5.4	11.4
COPPER BOTTOM PILLOW	5200	4/01	SP	8.1	6.5	13.3
COPPER CAMP	6950	3/31	58	19.1	24.5	32.8
COPPER CAMP PILLOW	6950	4/01	SP	19.5	23.5	39.3
COPPER CREEK	5700	3/31	25	8.5	10.9	15.5
COPPER LAKE CREEK	6100	3/31	45	14.4	20.7	25.2
COPPER MOUNTAIN	7700	3/29	44	11.4	11.2	12.2
COYOTE HILL	4200	3/29	16	5.0	5.2	10.4
CPEVICE MOUNTAIN	8400	3/27	38	9.3	9.0	11.5
CRYSTAL LAKE	6050	3/29	60	19.0	9.4	15.1
CRYSTAL LAKE PILLOW	6050	4/01	SP	17.8	10.2	14.3
DAD CREEK LAKE	8400	3/28	58	14.9	13.6	15.4
DAISY PEAK	7600	3/30	33	8.4	9.2	12.2
DALY CREEK	5780	3/27	42	10.9	10.6	12.7
DALY CREEK PILLOW	5780	4/01	SP	9.4	13.8	14.4
DARKHORSE LAKE	8600	3/27	85	25.7	24.6	28.9
DARKHORSE LAKE PILLOW	8700	4/01	SP	24.6	19.4	25.2
DAVIS CREEK	5400	3/30	45	15.0	26.8	26.2
DEADMAN CREEK	6450	3/28	36	10.6	9.4	12.2
DEADMAN CREEK PILLOW	6450	4/01	SP	9.6	6.2	11.4
DESERT MOUNTAIN	5600	3/29	39	12.5	12.2	16.6
DEVILS SLIDE	8100	3/26	77	23.0	21.8	23.7
DISCOVERY BASIN	7050	3/27	50	11.7	9.0	11.1
DIVIDE	7800	3/28	49	12.5	15.5	12.0
DIVIDE PILLOW	7800	4/01	SP	12.2	14.5	12.2
DIX HILL	6400	4/01	37	11.5	7.3	11.4
DUPUYER CREEK PILLOW	5750	4/01	SP	5.2		
EAGLE CREEK	7000	3/29	49	14.2	11.4	15.5
EAST BOULDER S	9250	3/26	77	23.0A	26.5	32.8
EAST FORK R.S.	5400	3/26	15	4.4	2.6	6.2
FL DORADO MINE	7800	3/26	70	19.2	19.8	22.8
ELK HORN SPRINGS	7800	3/27	34	7.5	9.0	9.9
FLK PEAK	8000	3/27	55	16.7	14.3	18.3
EMERY CREEK	4350	3/29	33	12.0	12.4	16.3
EMERY CREEK PILLOW	4350	4/01	SP	11.6	16.8	16.5
FATTY CREEK	5500	3/31	62	22.0	25.7	25.0
FISH CREEK	8000	3/29	46	9.4	14.5	10.2
FISHER CREEK	9100	3/28	83	29.3	31.9	41.1
FISHER CREEK PILLOW	9100	4/01	SP	26.7	28.5	38.0
FIVE-BULL	5700	3/31	0	.0	3.9	7.2
FLATTOP MOUNTAIN PILLOW	6300	4/01	SP	33.6	45.6	49.7
FLEECER RIDGE	7500	3/30	36	8.4	12.1	12.0

SNOW April 1, 1984

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Elevation				Last Year	Average
FOOLHFN	8280	3/27	49	13.7	17.4	18.3
FOREST LAKE	6400	3/29	40	10.3	9.8	13.7
FOUR MILE	6900	3/29	35	9.0	10.9	9.4
FOURTH OF JULY	3450	3/26	14	3.6	4.8	9.2
FRED BURR PASS	8000	4/05	76	25.4	24.5	26.7
FREIGHT CREEK	6000	4/01	29	8.7	10.1	16.7
FRIDAY HILL	4620	3/26	40	13.0	22.4	24.5
FROHNER MEADOWS	6480	3/26	26	6.8	6.8	8.9
FROHNER MEADOWS PILLOW	6480	4/01	SP	8.3	7.3	8.8
GARVER CREEK	4250	3/30	17	5.3	11.2	11.3
GARVER CREEK PILLOW	4250	4/01	SP	4.2	10.6	10.2
GIBBONS PASS	7100	3/26	73	22.3	24.8	24.7
GOAT MOUNTAIN	7000	4/01	19	5.3	6.3	11.5
GOLD CREEK LAKE	7200	3/26	56	15.5	14.4	17.0
GOLD STONE	8100	3/26	63	16.6	18.0	18.2
GRASSHOPPER	7000	3/27	23	6.2	5.8	6.4
GRAVE CREEK	4300	3/30	33	11.8	14.8	18.3
GRAVE CREEK PILLOW	4300	4/01	SP	11.6	16.6	17.1
GRIFFIN CREEK DIVIDE	5150	3/30	24	6.6	10.0	12.1
GUNSIGHT LAKE	6300	4/01	83	31.9	32.2	41.6
HAND CREEK	5030	3/28	32	9.2	11.8	15.0
HAND CREEK PILLOW	5030	4/01	SP	8.2	8.1	16.0
HAWKINS LAKE	6450	3/30	58	19.7	32.1	33.5
HAWKINS LAKE PILLOW	6450	4/01	SP	16.2	28.1	30.9
HEART LAKE TRAIL	4800	4/02	40	15.8	15.4	23.0
HEBGFN DAM	6550	3/29	46	13.0	15.5	12.5
HELL ROARING DIVIDE	5770	3/30	71	24.0	29.3	33.1
HERRIG JUNCTION	4850	3/27	54	18.0	25.3	28.6
HOLBROOK	4530	3/29	14	4.2A	4.8	10.2
HOOD MEADOW	6600	3/26	37	10.3	8.9	12.0
HOODOO BASIN	6050	4/02	101	39.3	46.2	52.7
HOODOO BASIN PILLOW	6050	4/01	SP	34.7	41.9	47.1
HOODOO CREEK	5900	4/02	94	36.2	41.4	49.2
INDEPENDENCE	7850	3/26	45	13.2	15.7	19.6
INTERGAARD	6450	3/30	29	7.5	6.4	9.3
JAHNKE LAKE TRAIL	7200	3/26	40	8.8	10.8	10.2
JOHNSON PARK	6450	3/30	16	5.1	4.8	7.7
KEELER CREEK	3300	3/30	0	.0	6.6	11.3
KINGS HIL.	7500	3/29	49	13.6	10.8	15.2
KISHENEHN	3890	3/31	8	1.4	5.1	7.8
KIWANIS CAMP	3720	3/29	0	.0	.0	1.2
KRAFT CREEK PILLOW	4750	4/01	SP	9.7	9.8	12.4
LAKE CREEK	6100	3/28	34	9.5	10.5	9.2
LAKEVIEW CANYON	6930	3/30	36	8.6	20.2	13.2
LAKEVIEW RIDGE	7400	3/30	34	8.1	19.2	11.6
LAKEVIEW RIDGE PILLOW	7400	4/01	SP	11.2	22.0	13.1
LEMHI PASS	7480	3/29	42	9.2	7.8	9.6
LEMHI RIDGE	8100	3/29	48	11.0	9.3	11.0
LEMHI RIDGE PILLOW	8100	4/01	SP	12.3	9.1	11.4
LICK CREEK	6860	3/27	48	11.9	9.2	11.0
LICK CREEK PILLOW	6860	4/01	SP	11.0	9.5	10.1
LITTLE PARK	7400	3/28	63	17.0	16.1	17.2
LOGAN CREEK	4300	3/28	15	3.6	5.2	7.7
LONE MOUNTAIN	8880	3/30	77	23.4	25.8	23.9
LOST HORSE	5940	3/29	79	27.2	28.8	34.4

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SNOW		April 1, 1984		THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE		Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)		
NAME						Last Year	Average	
LOST SOUL	4800	3/30	24	8.0	15.0	16.0		
LOWER TWIN	7900	3/29	72	22.4	25.1	22.8		
LOWER TWIN PILLOW	7900	4/01	SP	20.3	24.4	21.3		
LUBRECHT FLUME	4680	3/30	0	.0	.0	4.2		
LUBRECHT FLUME PILLOW	4680	4/01	SP	.0	1.0	5.5		
LUBRECHT FOREST # 3	5450	3/30	16	4.8	4.9	7.5		
LUBRECHT FOREST # 4	4650	3/30	0	.0	.0	2.6		
LUBRECHT FOREST # 6	4040	3/30	0	.0	.4	2.8		
LUBRECHT HYDROPLOT	4200	3/30	0	.0	.0	5.9		
MADISON PLATEAU	7750	3/26	66	20.0	27.3	24.5		
MADISON PLATEAU PILLOW	7750	3/26	SP	18.0	26.9	25.7		
MANY GLACIER	4900	4/01	37	13.2	18.5	21.7		
MANY GLACIER PILLOW	4900	4/01	SP	12.1	15.6	19.3		
MARIAS PASS	5250	3/30	32	11.4	16.4	18.5		
MAYNARD CREEK	6210	3/29	53	15.3	12.7	16.9		
MAYNARD CREEK PILLOW	6210	3/29	SP	12.2	10.4	13.3		
MIDDLE MILL CREEK	7850	3/30	70	19.7	21.5	17.8		
MILL CREEK	7500	3/29	44	12.0	9.0	14.5		
MINERAL CREEK	4000	3/29	35	11.8	15.4	18.8		
MONUMENT PEAK	8850	3/26	64	19.4	23.4	28.2		
MONUMENT PEAK PILLOW	8850	4/01	SP	16.7	17.0	24.3		
MOULTON RESERVOIR	6850	3/30	36	8.8	7.1	7.0		
MOUNT LOCKHART	6400	3/27	46	14.2	18.4	24.4		
MOUNT LOCKHART PILLOW	6400	4/01	SP	12.1	16.3	23.1		
MUDD LAKE	7650	3/28	59	16.0	21.9	21.5		
MULE CREEK	8300	3/27	46	12.0	14.5	16.0		
MULE CREEK PILLOW	8350	4/01	SP	12.7	13.3	15.6		
NEVADA CREEK	6480	3/31	40	10.6	12.8	15.0		
NEVADA CREEK PILLOW	6480	4/01	SP	7.8	11.6	14.3		
NEW WORLD	6900	3/29	57	16.7	14.0	16.5		
NEWTON MOUNTAIN	5600	3/26	73	22.5	39.2	39.2		
NEZ PERCE CAMP	5650	3/28	42	13.6	12.8	15.9		
NEZ PERCE CAMP PILLOW	5650	4/01	SP	13.7	13.0	15.9		
NEZ PERCE CREEK	6500	3/29	32	7.8	6.4	7.4		
NEZ PERCE PASS	6570	3/28	54	17.0	13.7	18.3		
NOISY BASIN	6040	3/29	135	50.1	47.3	46.6		
NOISY BASIN PILLOW	6040	4/01	SP	45.9	43.7	40.5		
NORTH FK. ELK CREEK	6250	4/02	37	9.6	11.4	13.2		
NORTH FK. ELK CREEK PILLOW	6250	4/01	SP	10.0	11.1	13.1		
NORTH FORK JOCKO	6330	3/31	104	39.8	39.7	47.6		
NORTH MEADOW	7500	3/29	38	9.6	11.2	9.3		
NORTHEAST ENTRANCE	7350	3/31	25	6.5	8.4	10.1		
NORTHEAST ENTRANCE PILLOW	7350	4/01	SP	7.3	8.5	10.0		
NOTCH	8500	3/28	83	20.8	22.6	17.2		
OPHIR PARK	7150	4/01	59	17.9	15.6	18.5		
PALISADE CREEK	8250	3/27	82	24.4	30.0	31.0		
PETERSON MEADOWS	7200	4/03	42	11.6	9.3	11.2		
PETERSON MEADOWS PILLOW	7200	4/01	SP	11.1	9.7	11.6		
PICKET PIN D	9450	3/26	76	23.0A	22.0	27.5		
PICKET PIN LOWER	6200	3/28	18	5.4	3.4	2.4		
PICKET PIN MIDDLE	7250	3/28	38	11.2	7.2	14.1		
PICKET PIN UPPER	8100	3/28	63	19.2	19.4	22.2		
PICKFOOT CREEK	6650	3/26	32	9.5	9.7	12.1		
PICKFOOT CREEK PILLOW	6650	4/01	SP	9.7	13.1	13.2		
PIKE CREEK	5930	3/26	49	15.6	22.2	28.7		
PIKE CREEK PILLOW	5930	4/01	SP	17.4	24.0	30.1		
PIPESTONE PASS	7200	3/29	22	5.0	6.2	6.1		
PLACER BASIN F	9830	3/26	60	18.0A	19.0	22.4		
PLACER BASIN PILLOW	8830	4/01	SP	15.6	14.5	17.9		
POORMAN CREEK	5100	3/30	65	24.2	34.5	36.9		
POORMAN CREEK PILLOW	5100	4/01	SP	21.4	27.9	33.8		



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		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
					Last Year	Average
NAME	Elevation					
PORCUPINE	6500	3/30	35	9.1	6.0	8.6
PORCUPINE PILLOW	6500	4/01	SP	8.8	5.5	8.0
POTOMAGETON PARK	7150	3/30	48	14.6	16.4	15.4
RED MOUNTAIN	6000	4/02	38	11.8	21.0	19.9
RED TOP	5260	3/26	58	17.8	34.2	32.1
ROCK CREEK	5600	3/29	51	17.0	8.2	10.8
ROCK CREEK MEADOWS	8160	3/28	66	18.5	20.4	24.8
ROCKER PEAK	8000	3/29	50	13.6	13.4	16.2
ROCKER PEAK PILLOW	8000	4/01	SP	11.3	12.9	15.9
ROCKY BOY	4700	3/29	71	6.4	.0	5.0
ROCKY BOY PILLOW	4700	3/29	SP	6.2	3.3	5.0
SACAJAWEA	6550	3/29	55	16.7	14.6	15.7
SADDLE MOUNTAIN	7940	3/26	78	23.2	25.6	26.5
SADDLE MOUNTAIN PILLOW	7900	4/01	SP	24.2	23.5	27.0
SAND BASIN LOWER	6480	3/28	40	9.8	11.6	15.6
SENTINEL CREEK	8300	3/30	68	21.8	26.4	25.3
SHOWER FALLS	8100	3/26	80	24.3	22.6	24.9
SHOWER FALLS PILLOW	8100	4/01	SP	26.1	23.3	24.5
SILVER RJN	6630	3/27	31	6.0	5.5	6.6
SILVER RUN PILLOW	6630	4/01	SP	7.2	5.4	6.4
SKALKAKO SUMMIT	7250	3/27	74	20.7	21.2	27.6
SKALKAKO SUMMIT PILLOW	7250	4/01	SP	19.5	22.8	27.9
SKYLARK TRAIL PILLOW	6200	4/01	SP	27.7	29.6	35.8
SLAG-A-MELT LAKE	8750	3/27	84	24.5	30.2	27.3
SLIDE ROCK MOUNTAIN	7100	3/28	52	14.6	12.8	18.1
SMUGGLER MINE	6960	3/30	52	13.5	13.6	10.9
SOUTH FORK SHIELDS	8100	3/30	86	30.0	22.0	26.4
SOUTH FORK SHIELDS PILLOW	8100	4/01	SP	21.9	15.1	18.5
SPOTTED BEAR MOUNTAIN	7000	4/01	34	11.4A	17.4	15.9
SPUR PARK	8100	3/28	61	19.6	16.0	22.7
SPUR PARK PILLOW	8100	4/01	SP	19.8	17.7	23.0
STAHL PEAK	6030	3/30	96	34.7	41.1	41.1
STAHL PEAK PILLOW	6030	4/01	SP	28.5	34.3	35.3
STAR LAKE E	9650	3/26	78	29.5A	36.5	46.6
STEMPLE PASS	6600	3/28	34	7.2	8.2	11.2
STORM LAKE	7780	4/03	54	15.3	14.4	14.6
STRYKER BASIN	6180	3/27	81	27.0	31.4	37.0
STUART MILL	6500	3/30	23	6.4	6.7	7.3
STUART MOUNTAIN	7400	3/31	91	34.0	34.6	34.0
SUCKER CREEK	3960	3/29	0	.0	.0	0.4
TAYLOR ROAD	4080	3/29	14	3.6	.0	2.9
TEN MILE LOWER	6600	3/27	30	6.7	5.7	8.1
TEN MILE MIDDLE	6800	3/27	45	10.2	9.2	12.8
TEN MILE UPPER	8000	3/27	54	12.4	10.4	14.8
TEPEE CREEK	8000	3/28	59	16.1	20.2	16.3
TEPEE CREEK PILLOW	8000	4/01	SP	14.5	17.1	13.6
TIMBERLINE CREEK	8850	3/27	63	12.8	15.2	15.8
TRAIL CREEK	7090	3/29	39	8.6	6.6	9.2
TRINKUS LAKE	6100	4/01	113	43.0	43.0	45.1
TRUMAN CREEK	4060	3/28	4	1.2	.0	2.7
TV MOUNTAIN	6800	3/31	57	19.4	18.2	20.3
TWELVEMILE CREEK	5600	3/29	49	17.3	16.7	23.4
TWELVEMILE CREEK PILLOW	5600	4/01	SP	14.7	15.2	20.1
TWENTY-ONE MILE	7150	3/30	49	14.4	17.9	18.9

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DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
					Last Year	Average
NAME	Elevation					
TWIN CREEKS	3580	4/01	13	5.1A	5.5	11.6
TWIN LAKES	6510	3/29	103	35.4	36.3	44.1
TWIN LAKES PILLOW	6400	4/01	SP	31.1	35.2	42.4
UPPER HOLLAND LAKE	6200	3/31	84	30.6	26.9	37.5
WALDRON	5600	3/27	14	3.8	7.2	11.2
WALDRON PILLOW	5600	4/01	SP	6.0	7.9	10.1
WARM SPRINGS	7800	4/05	60	19.1	18.8	21.1
WARM SPRINGS PILLOW	7800	4/01	SP	20.9	19.0	23.2
WEASEL DIVIDE	5450	3/30	65	23.3	36.1	35.4
WEST ROSEBUD	7500	3/28	31	7.8	8.3	12.4
WEST YELLOWSTONE	6700	3/30	35	9.6	12.5	12.5
WEST YELLOWSTONE PILLOW	6700	3/30	SP	8.1	11.0	10.4
WHISKEY CREEK	6800	3/26	56	16.7	24.2	21.9
WHISKEY CREEK PILLOW	6800	4/01	SP	13.1	18.5	18.3
WHITE MILL	8700	3/28	65	21.0	24.8	29.6
WHITE MILL PILLOW	8700	4/01	SP	18.6	21.9	26.3
WHITE PINE RIDGE	8850	3/28	36	7.1	7.1	5.8
WILLOW CREEK	6500	3/29	36	10.0	8.2	9.7
WOOD CREEK	5960	3/31	19	4.7	9.8	14.8
WOOD CREEK PILLOW	5960	4/01	SP	4.5	7.9	15.2
WRONG CREEK	5700	3/30	25	7.0	9.8	15.0
WRONG RIDGE	6800	3/30	43	11.8	13.6	20.9

IDAHO

ABOVE BURKE (ID)	4700	3/30	37	14.2	15.4	24.0
BEAR MOUNTAIN (ID)	5400	3/30	98	41.2	66.1	62.9
BEAR MOUNTAIN PILLOW (ID)	5400	4/01	SP	38.1	-	-
BIG SPRINGS (ID)	6500	3/28	56	17.8	23.2	21.9
BLACK CANYON (ID)	7960	3/28	92	29.8	40.1	35.8
BLACK MOOSE (ID)	8160	3/28	93	29.0	45.2	40.6
BLUE LEDGE MINE (ID)	6900	3/29	55	16.0	31.0	17.5
CAMP CREEK (ID)	6580	3/28	39	9.2	17.8	11.5
CRAB CREEK (ID)	6860	3/29	55	15.0	28.8	-
CRAB CREEK PILLOW (ID)	6860	4/01	SP	15.2	30.3	-
GOAT LAKE (ID)	6500	3/30	110	33.3A	-	47.7
HUMBOLDT GULCH (ID)	4250	3/30	25	9.0	11.6	-
HUMBOLDT GULCH PILLOW (ID)	4250	4/01	SP	7.0	10.1	-
ISLAND PARK (ID)	6290	3/28	50	16.0	20.7	17.4
ISLAND PARK PILLOW (ID)	6290	4/01	SP	15.3	21.0	-
KILGORE (ID)	6320	3/29	40	13.7	15.2	11.8
KIT CARSON (ID)	4950	3/28	28	9.0	4.7	9.4
LATHAM SPRINGS (ID)	7630	3/28	90	25.5	36.4	31.4
LOLO PASS (ID)	5230	3/28	59	20.8	22.0	31.8
LOLO PASS PILLOW (ID)	5230	4/01	SP	22.7	-	-
LOOKOUT (ID)	5250	3/30	69	25.4	33.0	36.3
LUCKY DOG (ID)	6860	3/28	72	23.4	31.2	25.9
MOOSE CREEK (ID)	6200	3/30	62	19.2	18.4	16.8
MOOSE CREEK PILLOW (ID)	6200	4/01	SP	20.9	19.9	-
MOSQUITO RIDGE (ID)	5200	3/31	78	28.2	42.6	38.9
MOSQUITO RIDGE PILLOW (ID)	5200	4/01	SP	28.6	43.9	-
SAVAGE PASS (ID)	6170	3/28	68	21.5	23.0	28.4
SAVAGE PASS PILLOW (ID)	6170	4/01	SP	22.8	-	-
SAWTELL MOUNTAIN (ID)	8720	3/28	103	34.9	51.0	35.9
SMITH CREEK (ID)	4800	3/29	97	35.5	51.8	47.7
SUNSET (ID)	5540	3/31	64	22.6A	28.4	35.1
SUNSET PILLOW (ID)	5540	4/04	SP	29.4	35.3	-
TARGHEE PASS (ID)	6980	3/28	EST	12.8	20.1	16.4
VALLEY VIEW (ID)	6680	3/28	48	14.3	21.9	18.0
WHITE ELEPHANT (ID)	7710	3/28	73	23.1	35.1	26.3
WHITE ELEPHANT PILLOW (ID)	7710	4/01	SP	24.5	37.3	-

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DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
					Last Year	Average
NAME	Elevation					
WYOMING						
BALD MOUNTAIN (WY)	9380	3/28	82	21.9	19.3	24.2
BALD MOUNTAIN PILLOW (WY)	9380	4/01	SP	20.6	16.7	-
BEARTOOTH LAKE PILLOW (WY)	9270	4/01	SP	14.9	17.9	-
BURGESS R.S. (WY)	7880	4/02	53	10.3	6.6	8.8
BURGESS R.S. PILLOW (WY)	7880	4/01	SP	12.3	11.5	-
CANYON PILLOW (WY)	7940	4/01	SP	11.5	12.0	16.9
EAST ENTRANCE (WY)	6960	3/30	26	6.8	9.5	9.7
EVENING STAR PILLOW (WY)	9200	4/01	SP	22.5	16.1	-
LAKE CAMP (WY)	7780	3/30	32	8.2	8.8	10.3
LUPINE CREEK (WY)	7380	4/01	31	7.6	10.1	11.0
NORRIS BASIN (WY)	7500	4/01	30	7.0	8.4	11.5
NORTH TONGUE (WY)	8450	4/02	52	13.1	12.0	14.3
OLD FAITHFUL (WY)	7400	4/01	39	10.2	16.4	16.0
PARKERS PEAK PILLOW (WY)	9400	4/01	SP	17.6	21.3	-
SYLVAN LAKE PILLOW (WY)	8420	4/01	SP	20.3	21.4	-
SYLVAN PASS (WY)	7100	3/30	34	9.8	10.7	13.9
THUMB DIVIDE (WY)	7980	3/29	50	14.8	18.2	22.0
TOGWOTEE PASS (WY)	9580	3/29	75	26.3	27.3	30.6
WOLVERINE (WY)	7650	3/30	27	6.5	11.7	13.8
WOLVERINE PILLOW (WY)	7650	4/01	SP	6.7	10.0	-
YOUNTS PEAK (WY)	8350	3/28	37	11.8A	-	21.8

ALBERTA

AKAMINA (AL)	5810	3/27	46	12.1	19.8	-
AKAMINA PILLOW (AL)	5810	4/01	SP	12.2	-	-
ALLISON PASS (AL)	6490	3/27	44	12.1	15.7	19.8
BOW RIVER (AL)	5080	3/29	22	5.6	8.1	8.3
BOW RIVER SUMMIT (AL)	6660	3/28	44	13.0	13.4	14.7
CHATEAU LAWN (AL)	5710	3/29	28	7.7	10.9	10.9
CUTHEAD LAKE (AL)	7250	3/28	46	13.0	11.9	15.8
HIGHWOOD SUMMIT BUSH (AL)	7250	3/27	48	13.0	12.8	15.6
KATHERINE LAKE (AL)	7810	3/28	53	15.3	-	-
LARCH VALLEY (AL)	7740	3/28	50	14.9	16.1	-
LEE CREEK Q (AL)	4890	3/28	13	4.1	6.2	7.2
LITTLE ELBOW SUMMIT (AL)	7090	3/27	40	9.2	10.9	11.7
LITTLE ELBOW SUMMIT PILLOW	7090	4/01	SP	11.5	-	-
MIDDLE DRYWOOD (AL)	5150	3/27	7	1.4	0.7	1.9
MIRROR LAKE (AL)	6590	3/29	36	9.4	11.2	11.9
MIST CREEK (AL)	5740	3/27	23	5.9	8.0	8.1
MOUNT SKOKI (AL)	6740	3/28	45	12.2	11.9	13.8
MUD LAKE (AL)	6200	3/27	37	10.1	11.7	13.0
PIPESTONE UPPER (AL)	5300	3/29	25	6.0	9.0	8.3
PTARMIGAN HUT (AL)	7150	3/28	48	14.8	12.8	16.4
SUNSHINE VILLAGE (AL)	7300	3/29	63	18.4	20.2	25.2
SUNSHINE VILLAGE PILLOW (AL)	7300	4/01	SP	20.6	-	-
THREE ISLE LAKE (AL)	7090	3/27	67	21.4	19.8	-
WILKINSON SUMMIT BUSH (AL)	6490	3/27	24	5.4	4.4	8.7
WILKINSON SUMMIT OPEN (AL)	6490	3/27	20	3.9	3.7	7.4

SNOW April 1, 1984

SNOW April 1, 1984		THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Elevation				Last Year	Average
<b>BRITISH COLUMBIA</b>						
BEAVERFOOT (BC)	6200	3/29	20	4.1	8.9	9.6
FERNIE (BC)	3510	3/28	0	.0	4.6	7.7
FERNIE EAST (BC)	4100	3/28	25	8.7	15.5	15.2
FERNIE NE (BC)	3510	3/28	12	3.7A	9.6	10.0
FIDELITY MOUNTAIN (BC)	6130	3/29	113	42.0	34.9	49.8
FIELD (BC)	4200	3/30	10	2.6A	4.7	5.4
FLOE LAKE (BC)	6860	3/29	18	23.2	24.4	31.4
GLACIER (3C)	4100	3/29	59	22.7	21.9	27.6
GRAY CREEK LOWER (BC)	5080	3/28	51	16.7	15.2	19.1
GRAY CREEK UPPER (BC)	6260	3/28	81	27.3	25.9	31.9
KICKING HORSE (BC)	5410	3/30	35	11.3	11.4	14.8
KIMBERLEY (BC)	3800	3/30	0	.0A	2.5	6.8
KIMBERLEY LOWER VOR (BC)	4490	3/30	16	2.2	5.4	7.4
KIMBERLEY MIDDLE VOR (BC)	5510	3/30	28	8.0	9.8	12.4
KIMBERLEY UPPER VOR (BC)	7020	3/30	42	13.4	15.1	20.1
MARBLE CANYON (BC)	4990	4/02	34	7.8	11.7	14.3
MORRISSEY RIDGE (BC)	6100	3/28	59	20.2	28.4	28.9
MOUNT ABBOT (BC)	6490	3/25	114	40.4	40.9	50.1
MOUNT ASSINIBOINE (BC)	7310	3/29	61	17.1	19.7	21.7
MOUNT JOFFRE (BC)	5740	2/29	37	9.9	13.9	15.6
MOYIE MOUNTAIN (BC)	6360	3/29	42	12.8	17.6	18.0
SINCLAIR PASS (BC)	4490	3/30	14	3.1	3.3	5.4
SULLIVAN MINE (BC)	5080	3/30	26	6.7	11.6	14.4
THUNDER CREEK (BC)	6590	3/29	38	7.7	10.1	11.5
UPPER ELK RIVER (BC)	4400	3/30	0	.0	.0	6.4
VERMONT CREEK (BC)	4990	3/29	32	9.1	17.2	20.0



# Columbia River Drainage

## STREAMFLOW FORECASTS

BASIN STREAM and/or FORECAST POINT	THIS YEAR		PAST RECORD		THIS YEAR		PAST RECORD		THIS YEAR		PAST RECORD	
	FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average	Last Year	Average	Thousand Acre Feet	Percent of Average	Last Year	Average	Thousand Acre Feet	Percent of Average	Last Year	Average
	PERIOD											
	April - September				April - July				April - June			
KOOTENAI RIVER below Libby Dam (1)	5,310	75	6,356	7,041	4,540	75	5,346	6,020				
FISHER RIVER near Libby	135	51		264	125	50		248				
YAAK RIVER near Troy	275	53		523	260	52		500				
KOOTENAI RIVER at Leonia (1)	6,260	73	7,948	8,602	5,460	73	6,857	7,498	4420	73	5,157	6,051
INFLOW MOULTON RESERVOIR nr BUTTE (Million Gallons)					210	80		263	192	81	179	237
WARM SPRINGS CREEK AT MEYERS DAM near Anaconda (2)	41.5	89		46.8	33.3	88		37.8				
FLINT CREEK near Southern Cross (3)	14.8	81	18.9	18.3	12.5	81	15.2	15.4				
FLINT CREEK below Boulder Creek (4)	60.5	80		75.8	47.5	80		59.5				
INFLOW LOWER WILLOW CREEK RESERVOIR near Hall (5)	11.0	70	11.6	15.7	10.2	68	10.2	14.9				
MIDDLE FORK ROCK CREEK near Philipsburg	64.0	82		78.2	58.0	82		70.5				
NEVADA CREEK near Finn	14.0	61		23.0	12.8	60		21.3				
BLACKFOOT RIVER near Bonner	710	71		999	625	69		904	540	69		782
CLARK FORK RIVER above Milltown (6)	700	86		816	610	86		708	520	87		597
CLARK FORK RIVER above Missoula	1,410	78	1,362	1,815	1,235	77	1,133	1,612	1060	77	880	1,379
WEST FORK BITTERROOT RIVER near Conner (7)	132	74		178	120	73		164				
BITTERROOT RIVER near Darby	410	71		580	375	70		532	330	71		464
SKALKAHO CREEK near Hamilton	48.3	86		56.0	42.0	86		48.7				
BURNT FORK CREEK near Stevensville (8)	31.5	84		37.4	27.0	84		32.2				
BITTERROOT RIVER at Missoula (9)	1,040	69		1,504	955	69		1,384	835	70		1,191
CLARK FORK RIVER below Missoula	2,450	74		3,319	2,190	73		2,996	1,895	74		2,570
CLARK FORK RIVER at St. Regis	3,290	75	3,450	4,411	2,970	75	3,073	3,928	2,570	75	2,437	3,428
NORTH FORK FLATHEAD RIVER near Columbia Falls	1,400	73		1,913	1,240	72		1,732	1,050	71		1,471
MIDDLE FORK FLATHEAD RIVER near West Glacier	1,360	73	1,545	1,869	1,240	72	1,401	1,713	1,050	72	1,122	1,453
SOUTH FORK FLATHEAD RIVER near Columbia Falls (10)	1,700	75	1,847	2,278	1,575	74	1,715	2,142	1,400	74	1,416	1,886
FLATHEAD RIVER at Columbia Falls (10)	4,270	74	4,943	6,208	4,220	74	4,508	5,721	3,670	75	3,654	4,921
SWAN RIVER near Big Fork	585	85		689	510	84		604				
FLATHEAD RIVER near Polson (11)	5,400	74	6,130	7,278	4,950	74	5,538	6,712	4,300	75	4,420	5,759
CLARK FORK RIVER near Plains (11)	8,470	70	9,880	12,153	7,720	70	8,748	11,071	6,620	70	6,902	9,459
THOMPSON RIVER near Thompson Falls	172	66		261	150	64		233				
PROSPECT CREEK at Thompson Falls	93.0	65		142	86.0	65		132				
CLARK FORK RIVER at Whitehorse Rapids (12)	9,320	69		13,575	8,480	69		12,351	7,290	69		10,570

- (1) Adjusted for storage in Lake Kootenai.  
(2) Adjusted for storage in Silver Lake, diversions to and pumping from Georgetown Lake.  
(3) Adjusted for storage in Georgetown Lake, diversions from and pumping to Silver Lake.  
(4) Sum Flint Creek at Maxville and Boulder Creek at Maxville.  
(5) Sum of North Fork Lower Willow Creek near Hall and South Fork Lower Willow Creek near Hall.  
(6) Difference in observed flow Clark Fork above Missoula and Blackfoot near Bonner.

- (7) Adjusted for storage in Painted Rocks Reservoir  
(8) Adjusted for diversion into Sunset Highline Canal.  
(9) Difference in observed flow Clark Fork above and below Missoula.  
(10) Adjusted for storage in Hungry Horse Reservoir.  
(11) Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.  
(12) Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Noxon Rapids Reservoir.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

## WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Tobacco	Fair	Poor
Little Bitterroot	Fair	Poor
Mission Valley	Fair	Fair
Flint Creek	Fair	Fair
Upper Clark Fork	Fair	Fair
Nevada Creek	Fair	Fair
Blackfoot	Fair	Poor
West-side Bitterroot	Fair	Fair
East-side Bitterroot	Fair	Fair
Bitterroot River	Fair	Fair
Lower Clark Fork	Fair	Poor

## Below average snowpack continues

Snowpack showed good increases in the southern part of the drainage but remained well below average in the Kootenai River headwaters and Lower Clark Fork River drainage.

Even with this good snowfall, most areas still have below average snowpack. Only the Swan Range, Mission Mountains and an area along the Continental Divide near Butte have near to a little below average snowpack.

Low elevation snows are melting in the Kootenai, Flathead and Lower Clark Fork River drainages.

## SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

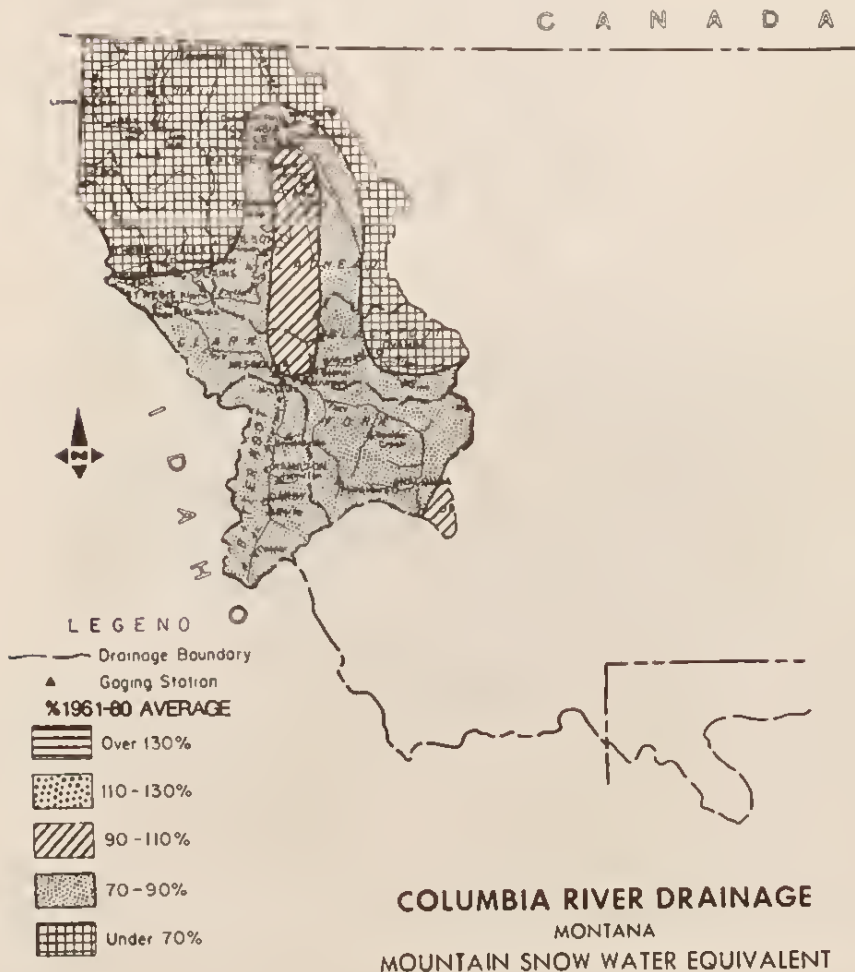
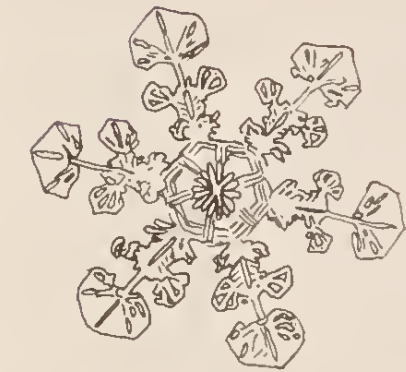
RIVER BASIN and/or SUBWATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average
East Kootenay/BC	26	116	67
Kootenai/Montana	30	68	57
Kootenai above Bonners Ferry	56	82	61
Little Bitterroot	9	76	53
N. Fk. Flathead	13	75	68
M. Fk. Flathead	13	81	64
S. Fk. Flathead	13	101	88
Swan	11	99	92
Flathead	59	89	77
Stillwater & Whitefish	9	79	63
Clark Fork above Blackfoot	43	94	80
Blackfoot	23	92	67
Upper Clark Fork above Missoula	66	93	75
Bitterroot	22	96	80
Lower Clark Fork below Missoula	19	86	64
Clark Fork (Total w/o Flathead)	107	92	73
Pend O'Reille (Clark Fork & Flathead)	166	91	75
Columbia (Pend O'Reille & Kootenai)	222	89	71

## Below average streamflow forecasts

Spring and summer runoff forecasts have increased in the Bitterroot, Upper Clark Fork and Blackfoot River drainages. Forecasts have remained about the same as last month in the Flathead River and have decreased for the smaller streams flowing into the Lower Clark Fork and Kootenai Rivers.

Streamflows are expected to be below average in all drainages and very low on smaller streams in the northwest corner.

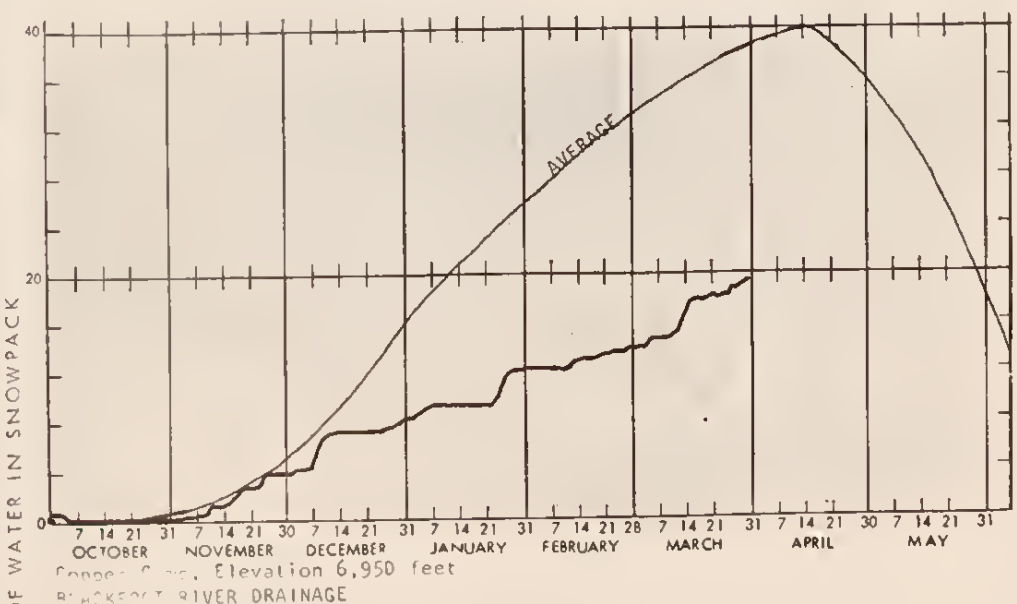
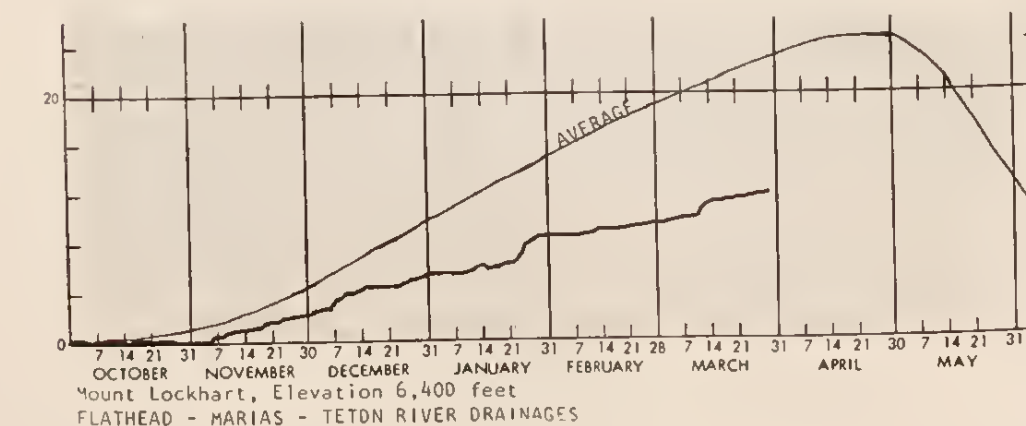
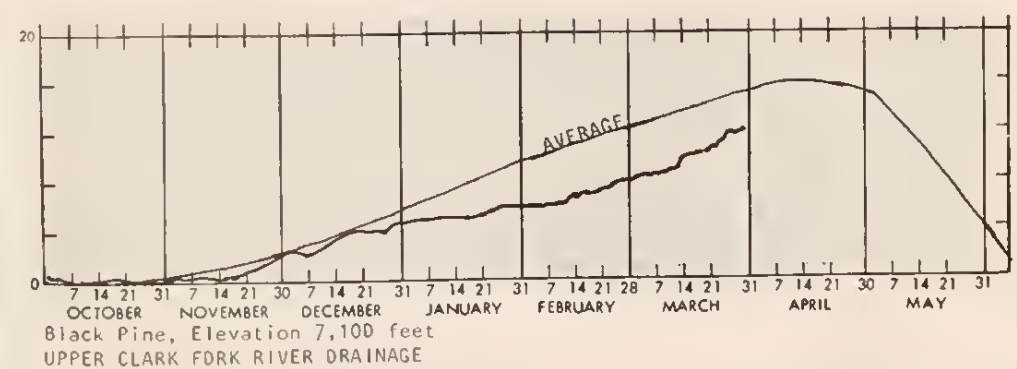
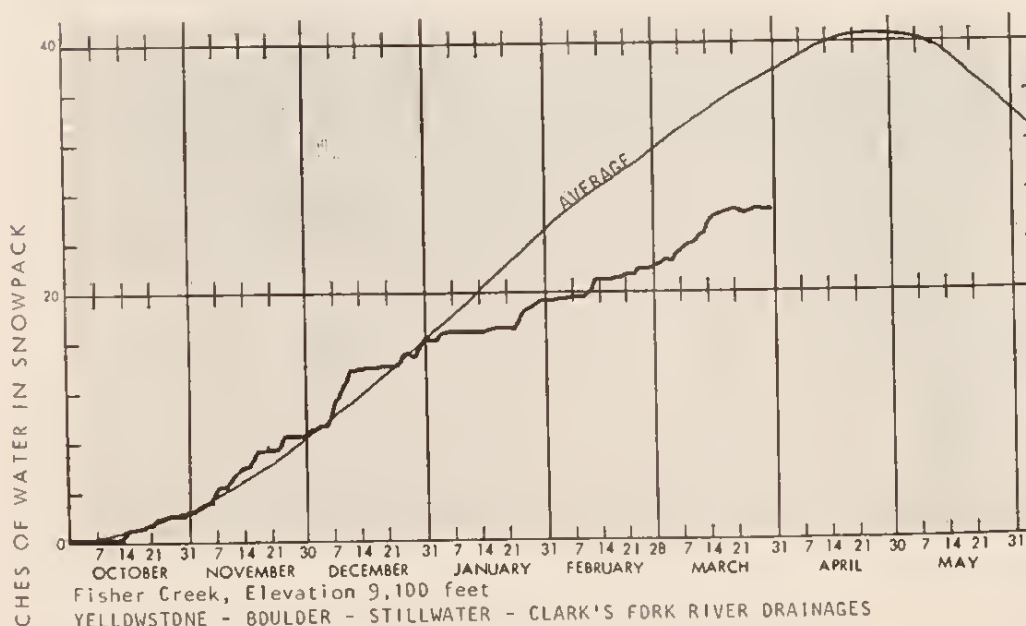
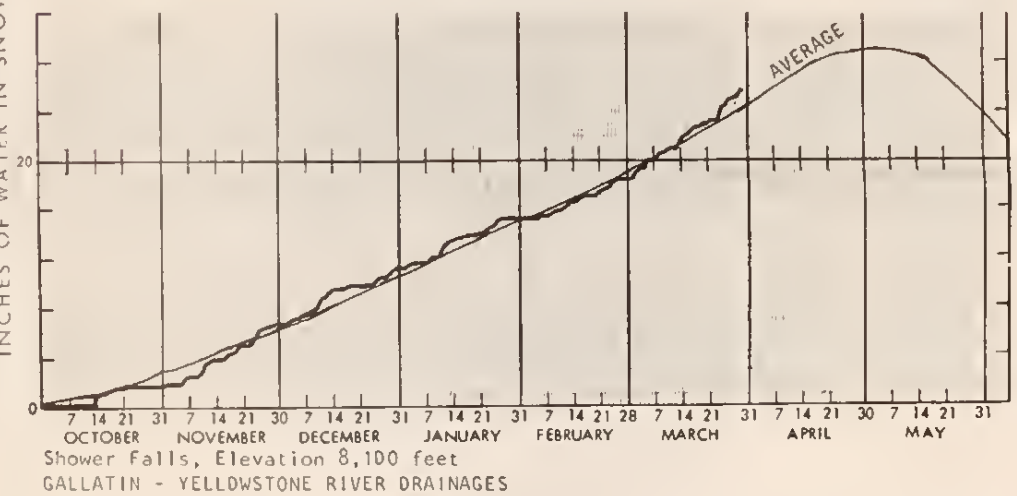
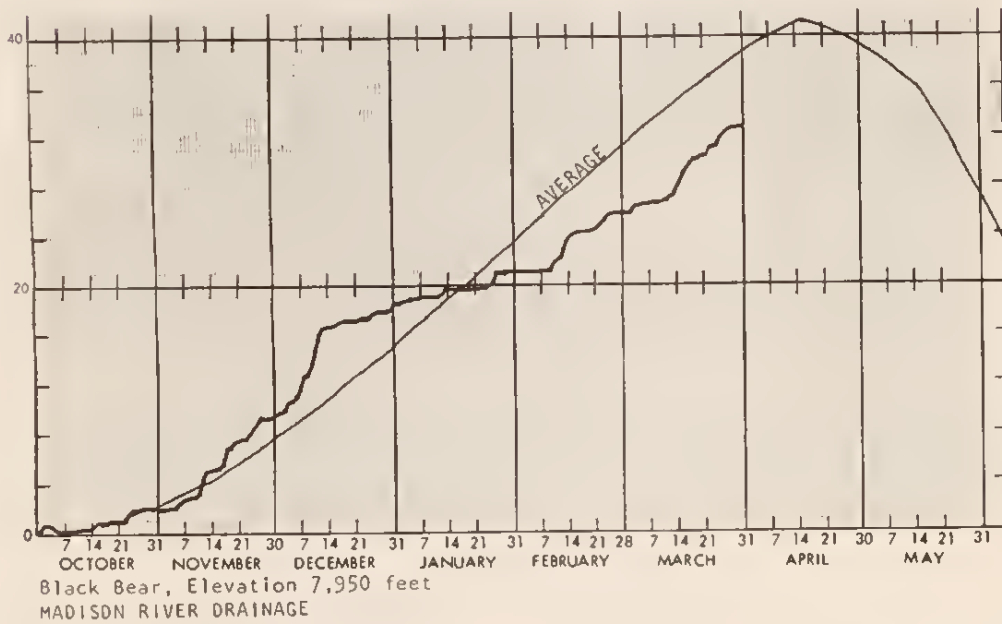
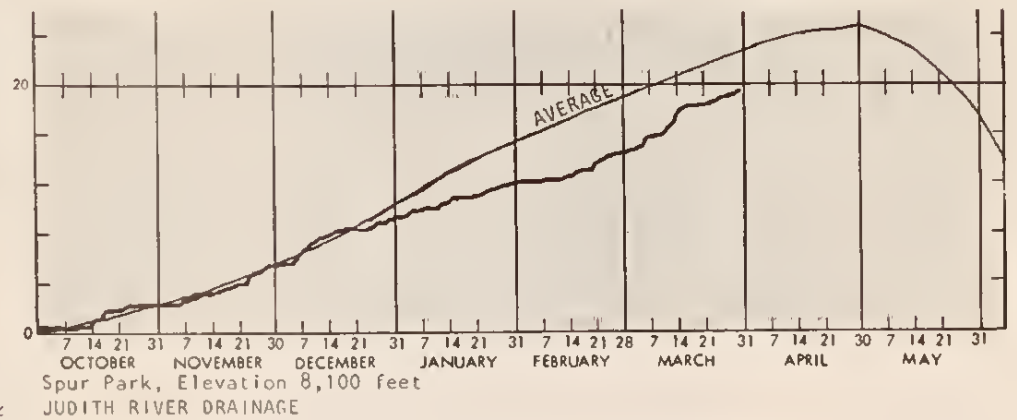
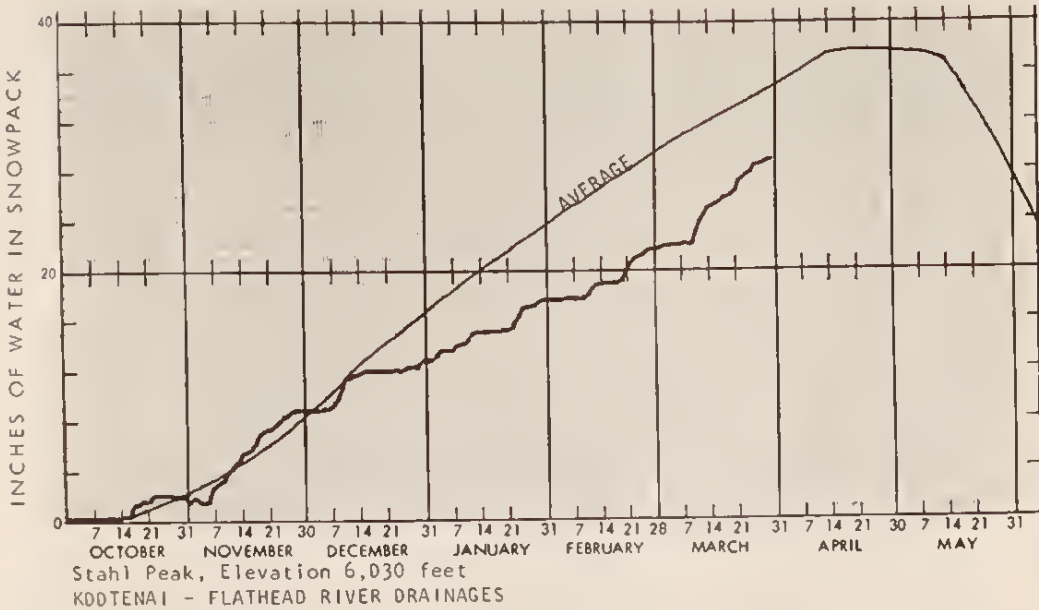
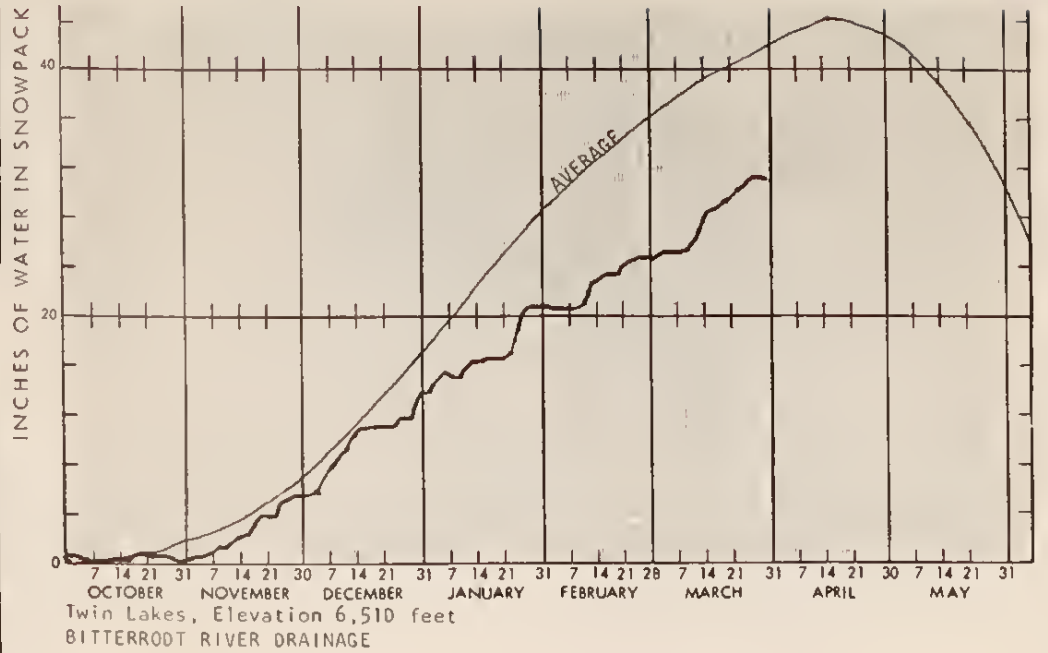
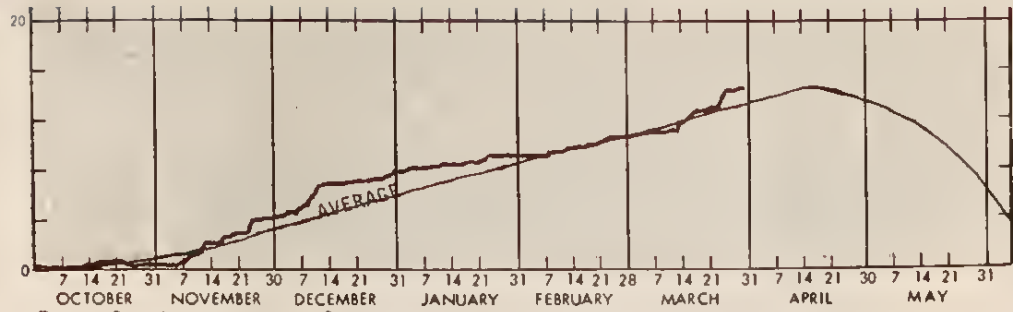
Some shortages of irrigation water are expected on all streams not having stored water. Streamflows will begin dropping sooner than usual and shortages of irrigation supplies will probably begin to develop earlier than normal.



CARRYOVER STORAGE FROM LAST YEAR'S GOOD RUNOFF, COMBINED WITH WINTER AND SPRING RUNOFF WILL ENABLE MOST RESERVOIRS IN THE STATE TO FILL THIS YEAR. THIS STORED WATER IS EXTREMELY VALUABLE IN WATER SHORT YEARS SUCH AS THIS ONE.



# SNOW PILLOW DATA



SATELLITE SNOW COVER



MISSOURI RIVER BASIN  
Above  
Canyon Ferry Dam

DATE	PERCENT SNOW COVER	AVERAGE SNOWLINE ELEVATION IN FEET
November 29, 1983	99.1	3940
December 20, 1983	100	3800
January 9, 1984	72	5720
January 31, 1984	78	5440
February 8, 1984	74	5630
February 27, 1984	100	3800
April 3, 1984	74	5630



GOOD SNOWFALL IN MARCH HELPED IMPROVE SNOWPACK  
CONDITIONS IN MANY AREAS.



RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH March 31, 1984

Bitterroot	RESERVOIR	Usable Capacity	Usable Storage		
			This Year	Last Year	Average
COLUMBIA					
Kootenai	Koocanusa	5,748.2	2,513.0	1,956.0	---
Flathead	Hungry Horse	3,451.0	2,074.0	2,699.0	2,054.0
	Flathead Lake	1,791.0	682.4	743.2	762.0
	Camas (4)	45.2	30.2	34.4	23.1
	Mission Valley (8)	100.3	58.0	46.7	41.1
Clark Fork	Georgetown Lake	31.0	27.2	24.1	23.7
	Lower Willow Creek	4.9	3.6	2.3	1.6
	Nevada Creek	12.6	8.1	8.9	7.4
	Noxon Rapids	334.6	322.3	322.2	197.6
Bitterroot	Painted Rocks	31.7	---	---	16.6
	Como	34.9	20.5	18.0	14.6
MISSOURI					
Beaverhead	Lima	84.0	54.8	46.3	38.0
	Clark Canyon	257.2	181.0	175.9	147.6
Ruby	Ruby	38.8	34.6	31.9	30.3
Madison	Hebgen Lake	377.5	261.7	258.4	233.6
	Ennis Lake	41.0	31.0	17.7	35.0
Gallatin	Middle Creek	8.0	3.9	3.8	3.9
Missouri	Canyon Ferry	2,043.0	1,574.0	1,626.0	1,498.0
	Hauser & Helena	61.9	63.0	62.5	60.0
	Helena Valley	10.4	3.7	---	4.9
	Lake Helena	10.4	10.9	10.7	9.8
	Holter Lake	81.9	79.6	75.4	64.9
	Fort Peck Lake	18,910.0	16,010.0	15,700.0	15,040.0
Smith	Smith River	10.6	10.8	9.5	7.6
	Newlan Creek	12.4	8.7	8.8	9.1
Musselshell	Bair	7.0	3.9	6.2	5.2
	Martinsdale	23.1	15.1	18.8	9.6
	Deadman's Basin	72.2	63.6	67.7	49.7
	Gibson	99.1	58.6	67.0	46.2
Sun	Willow Creek	32.2	24.4	24.7	22.1
	Pishkun	32.0	19.3	19.7	18.2
Marias	Lower Two Medicine	11.9	---	---	8.0
	Four Horns	19.2	---	---	12.6
	Swift	30.0	14.4	16.8	16.8
	Lake Frances	111.9	47.6	85.3	71.2
	Elwell (Tiber)	1,347.0	693.1	704.3	562.3
	Beaver Creek	3.5	3.2	3.1	1.7
Milk	Fresno	127.2	40.4	34.9	86.7
	Nelson	66.8	40.2	45.6	38.7
HUDSON BAY					
St. Mary's	Lake Sherburne	64.3	10.5	20.5	24.0
YELLOWSTONE					
Stillwater	Nystic Lake	21.0	1.6	1.5	4.2
Clark's Fork	Cooney	27.4	19.5	21.2	15.8
Tongue	Tongue River	68.0	23.8	13.4	41.6
Bighorn	Bighorn Lake	1,356.0	850.9	918.2	607.2

AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

GOVERNMENT AGENCIES

Canada

- Department of the Environment
- Atmospheric Environment Service
- Water Management Service
- British Columbia Ministry of Environment
- Inventory and Engineering Branch, Hydrology Section
- Alberta Environment
- Technical Services Division

Federal

- Department of the Army - Corps of Engineers
- Department of Agriculture - Forest Service
- Soil Conservation Service
- Department of Commerce - National Environmental Satellite Service
- National Weather Service
- Department of Interior - Bureau of Indian Affairs
- Fish and Wildlife Service
- Geological Survey
- National Park Service
- Bureau of Reclamation
- Department of Energy - Bonneville Power Administration

STATE AGENCIES

- Montana Conservation Districts
- Montana Department of Fish, Wildlife and Parks
- Montana Department of Natural Resources and Conservation
- Montana State University - Agricultural Experiment Station
- University of Montana - School of Forestry

PRIVATE ORGANIZATIONS

- The Anaconda Company
- Big Sky of Montana
- Butte Water Company
- Flathead Valley Community College
- Montana Power Company
- Pondera County Canal & Reservoir Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

